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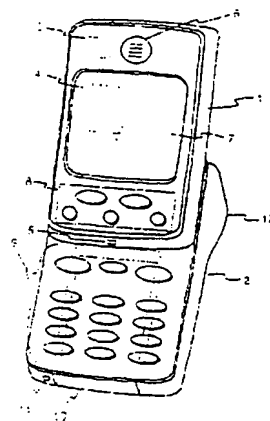
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[54]发明名称 带有照相机的移动通信装置

[57]摘要

本发明有关于一种带有照相机的移动通信装置,包括话筒(5)、扬声器、显示屏、键板和照相机,依照本发明,该移动通信装置包括至少两部分,在携带照相机时,它们能够完全互相覆盖,或是在使用照相机时互相局部覆盖,这样在携带照相机时,互相覆盖的部分(1,2)使照相机镜头(13)得到防护,在使用照相机时其镜头(13)能暴露出来。该移动通信装置使用方便,并且含有一个被防护的镜头(13),使用者通过对该移动通信装置进行正常操作即可实现这种防护。



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## 权 利 要 求 书

1. 一种带有照相机的移动通信装置，该装置包括话筒（5）、扬声器（6）、显示屏（7）、专用键板（9）和一台照相机，该移动通信装置包括至少两部分（1，2），在携带照相机时，它们能够完全互相覆盖，或是在使用照相机时局部互相覆盖，这样，在携带照相机时，互相覆盖的部分（1，2）使照相机的镜头（13）得到防护，在使用照相机时其镜头（13）能暴露出来，其特征在于，影象能通过照相机镜头（13）投射，而显示屏（7）作为照相机的取景器，向该装置使用者显示通过镜头投射的物象，原则上照相机镜头（13）设置在该装置上与显示屏（7）不同的一侧。

2. 权利要求 1 中的移动通信装置，其特征在于，该装置还包括一组功能键（8），而且即使当照相机镜头（13）被覆盖时，该装置可以通过话筒（5）、扬声器（6）、显示屏（7）以及一组功能键（8）进行电话呼叫。

3. 权利要求 1 中的移动通信装置，其特征在于，在该装置中，局部或完全互相覆盖的部分（1，2）通过滑动实现彼此之间的移动。

4. 权利要求 1 中的移动通信装置，其特征在于，含有该移动通信装置专用键板（9）的部分（2）有一个成形的把手（12），它在进行拍摄时易于被握持在手中。

5. 权利要求 1 中的移动通信装置，其特征在于，通过按下一个按钮实现照片的拍摄，该按钮的作用随着移动通信装置的使用方式而变化。

6. 权利要求 1 中的移动通信装置，其特征在于，为了尽可能地降低重心以便于在垂直位置下拍摄，电池（10）被设置在含有专用键板（9）的部分中。

7. 权利要求 1 中的移动通信装置，其特征在于，图象储存在该移动通信装置的存储器里，这些图象用于该移动通信装置里的电话号码簿中。

# 说明书

## 带有照相机的移动通信装置

本发明涉及一种带有照相机的移动通信装置，该装置除可用作普通移动电话及用于数据通信之外，还可用来拍摄照片。

从专利文献 W095/00374 可知，有一种与移动通信装置合为一体的照相机，其镜头和其他普通照相机一样总是暴露在外或者可从键板下取出，因此照相机在不使用时镜头能得到防护。通过比如移动或者掀起键板可露出镜头，当键板复位时，镜头同时复位。

该已知装置的问题在于，组合在移动通信装置内的无防护镜头容易脏污和划伤，或是有防护的镜头难于取出和回复到储藏的位置。

从专利文献 US5, 666, 159 可知，有一种电子相机系统，该系统拍摄的数字照片可以通过无线方式发送到多种远端设备去。

本发明的目的之一，是提供一种人体工学的移动通信装置，该装置带有易于进行拍摄的照相机，并且除了正常地使用移动通信装置以取出镜头之外，镜头不必用专门的方法就可以得到防护。

该目的的实现是通过应用一种结构，它与当今移动通信装置的滑盖并无不同，但它把移动通信装置分为大体相等的两个部分，在使用前要把它们尽量滑离分开。一组功能键方便地包括了至少三个但不多于十个的键。典型的功能键包括呼叫开始和结束键、箭头键或相应的浏览键、以及存储管理键。这组功能键也可包括一个已知的多功能键。

本发明有关于一种带有照相机的移动通信装置，该装置包括话筒、扬声器、显示屏、专用键板和一台照相机，并且该移动通信装置包括至少两部分，在照相机处于携带位置时它们完全互相覆盖、或是在照相机处于操作位置时互相局部覆盖，这样，在携带照相机时，互相覆盖的部分使照相机镜头得到防护，在照相机处于操作位置时其镜头能暴露出来。依照本发明，影象能通过照相机镜头投射，而显示屏作为照相机的取景器以便向该装置的使用者显示通过镜头投射的影象，原则上照相机镜头设置在该装置上与显示屏不同的一侧。

依照本发明，当为了特定的用途拉开该移动通信装置时，照相机镜头便可从该装置不受外界影响(诸如灰尘和尖利物品)的部分间取出。在使用照相机时，最好按下一个功能键，移动通信装置即可用于

拍摄照片。用照相机取景和打开快门时，移动通信装置的显示屏可以用做取景器，然后影象被储存在存储器中，取景器中的图象会在显示屏上定格。移动通信装置的设计还使其形状便于手持，当将该装置握在手中时，不会触摸到照相机镜头。在各从属的权利要求中，提出了

5 本发明的优选的实施方案。

参阅附图，现将本发明做详细的描述，其中：

图 1 显示移动通信装置的正面图，

图 2 显示依照本发明，该移动通信装置的背面图，和

图 3 显示依照本发明，该移动通信装置的方框图。

10 图 1 显示依照本发明的一种移动通信装置的正面图，它背面的照相机镜头显示在图 2 中。该移动通信装置包括两个部分，无线部分 1 和包含专用键板的手持部分 2。在图 1A 里，该移动通信装置已被拉开，处于使用状态，其中手持部分 2 已从电话部分 1 底下滑出。在图 1B 里，该移动通信装置已经闭合上，但通过使用一组功能键可以实现比如呼

15 叫之类功能。该移动通信装置还包括一个内置天线 3、无线部分 4、话筒 5、扬声器 6、显示屏 7、一组功能键 8、电池 10 和充电接口 11，在移动通信装置闭合上和被携带时该接口也能使用。处于使用状态时，也可以使用专用键板 9。并且为了便于手持，移动通信装置的手持部分 2 具有如 12 所示的易于握住的形状。在图 1A 中，电话内部的

20 部件 3，4，10 以及功能键板 8 的轮廓用虚线表示。

图 2 显示依照本发明的移动通信装置的背面图。在图 2A 里，该移动通信装置已经拉开处于使用状态，依照本发明，照相机的镜头 13 已经暴露出来，可以进行拍摄。在此情形下，无线部分 1 和手持部分 2 已经尽量地滑离。一个功能键 8 适于用做照相机的快门按钮。在图 2B

25 中，该移动通信装置已经合上而处于携带状态，不能进行拍摄，但可以通过使用一组功能键 8 进行电话呼叫。

在该移动通信装置上，照相机镜头 13 设置在显示屏 7 相对的位置，因此使用者既能自然地经过移动通信装置观测，同时也可在显示屏上观测要拍摄的目标。而且这种结构有利于制造，因为该移动通信

30 装置的背面可以使用单一模具制作，而且照相机单元能够很方便地安装到该移动通信装置的无线部分 1 里的平行印刷电路板单元的顶上。镜头 13 在上述的位置可以得到良好的防护。

为了尽可能地降低重心以便于在垂直位置下拍摄，该移动通信装置的电池 10 被设置在含有专用键板 9 的部分中。

图 3 显示依照本发明该移动通信装置基本部分的方框图。进入话筒 14 的话音由发射器 15 传送到双工开关 16，然后再传送到天线 17。由天线 17 接收到的来话被接收器 18 接收，然后传送到扬声器 19 供收听。所有功能由控制器 20 进行控制，该控制器连接着一个能提供输入信号的键板 23。这些输入信号包括诸如打开照相机 22 的快门。照相机 22 拍摄的照片被储存在存储器 21 中，并由显示屏 24 显示。

现在举例说明该移动通信装置用于拍摄时的使用方法。如图 1 B 和图 2B 中所示，当该移动通信装置在携带状态时，使用者握住无线部分 1 和手持部分 2 把它们尽量拉开，使该移动通信装置最好作为拨号或拍摄之用。也可以通过菜单控制来激活该移动通信装置以用于拍摄。当拍摄功能激活时，在无线部分 1 的显示屏 7 上，使用者能够看到照相机取景器的物象并可进行取景。按下该移动通信装置上的按键 8，9，图象就被拍摄下来，因此在这种使用状态中，上述按键起快门按钮的作用。用做快门按钮的按键，其作用最好由该移动通信装置的使用方式来决定，并且该按键设置在容易被按到之处，比如可使用拇指拍摄照片。在本文所述的移动通信装置里，该按键最好是在一组功能键 8 中，然而在大小不同的这种装置中，该按键可以设置在任意位置，比如设置在专用键板 9 中，但要考虑到装置的大小以方便使用。该按键在呼叫和拍摄状态下其作用不同，但在某一状态中还可以有变化。还有可能使用一个专门的快门按钮，但这一按钮不能用于平时的移动通信。

当打开快门，取景器中的图象在显示屏上定格时，表明所拍摄的照片已经储存在该装置本身的存储器里，但为了增加可以储存的照片数量，也可能使用另外的或者另外使用附加的存储器。

按下快门按钮会使照相机轻微抖动，为减轻抖动造成的图象模糊，在按下快门按钮之后和在存储器内储存图象之前，该装置会等待一段用户可选的延时。该延时最好可以在 0 到 1 秒之间，其每步有 200 毫秒的间隔，由使用者通过相应的菜单进行选择。

按下快门按钮，影象在显示屏上定格后，摄影者可以检查照片是否良好（比如在构图和用光方面），然后决定储存图象或是重拍。为

了节省存储器空间，照片最好以压缩格式储存在该移动通信装置存储器里。有一种这样的压缩格式就是 JPEG (Joint Photographers Experts Group, 即联合摄影专家组) 格式。储存的图象还可以继续传输，比如通过红外线或有线连接传输到个人计算机 (PC)，通过无线接口传输到一个电子邮件系统或另一台移动通信装置、或是一台传真机。

储存的图象可以用于该移动通信装置，比如用于带有图片的电话号簿中。

对于本发明的实施在此未做更加详尽的描述，因为熟练的技术人员能够实现如上所述的依照本发明的安排。

本发明并不局限于以上所描述的实施方案，下列权利要求将确切描述发明构思，在此范围之内可能有多种修改方案。

99.05.04

说明书附图

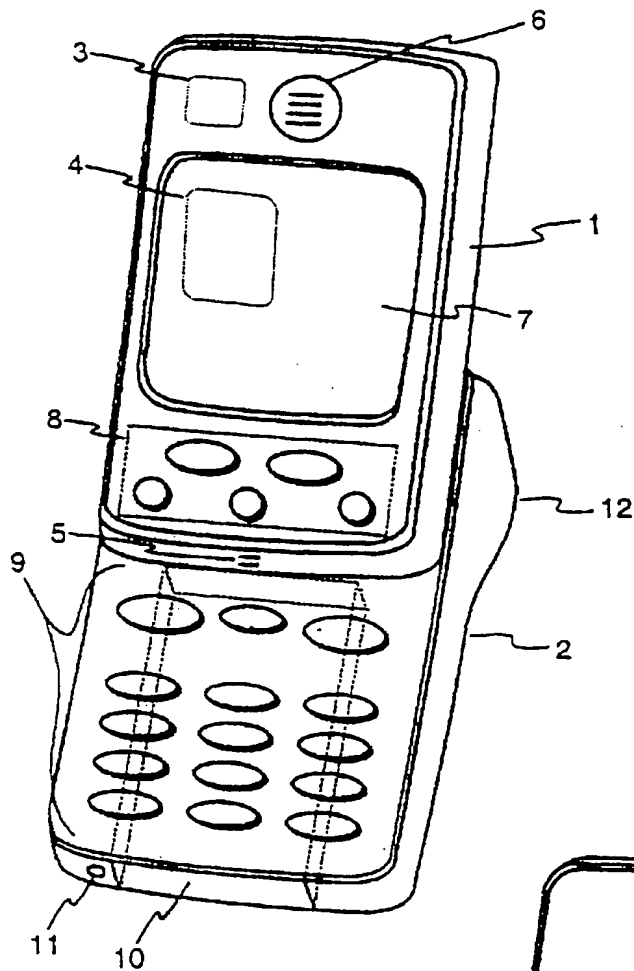


图 1A

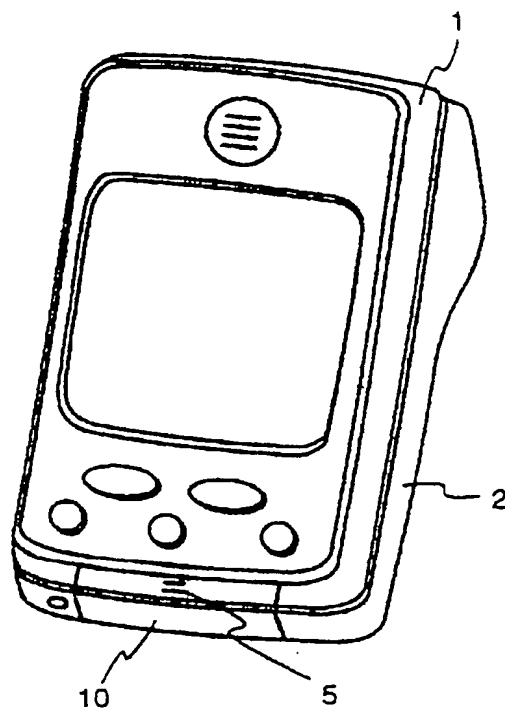
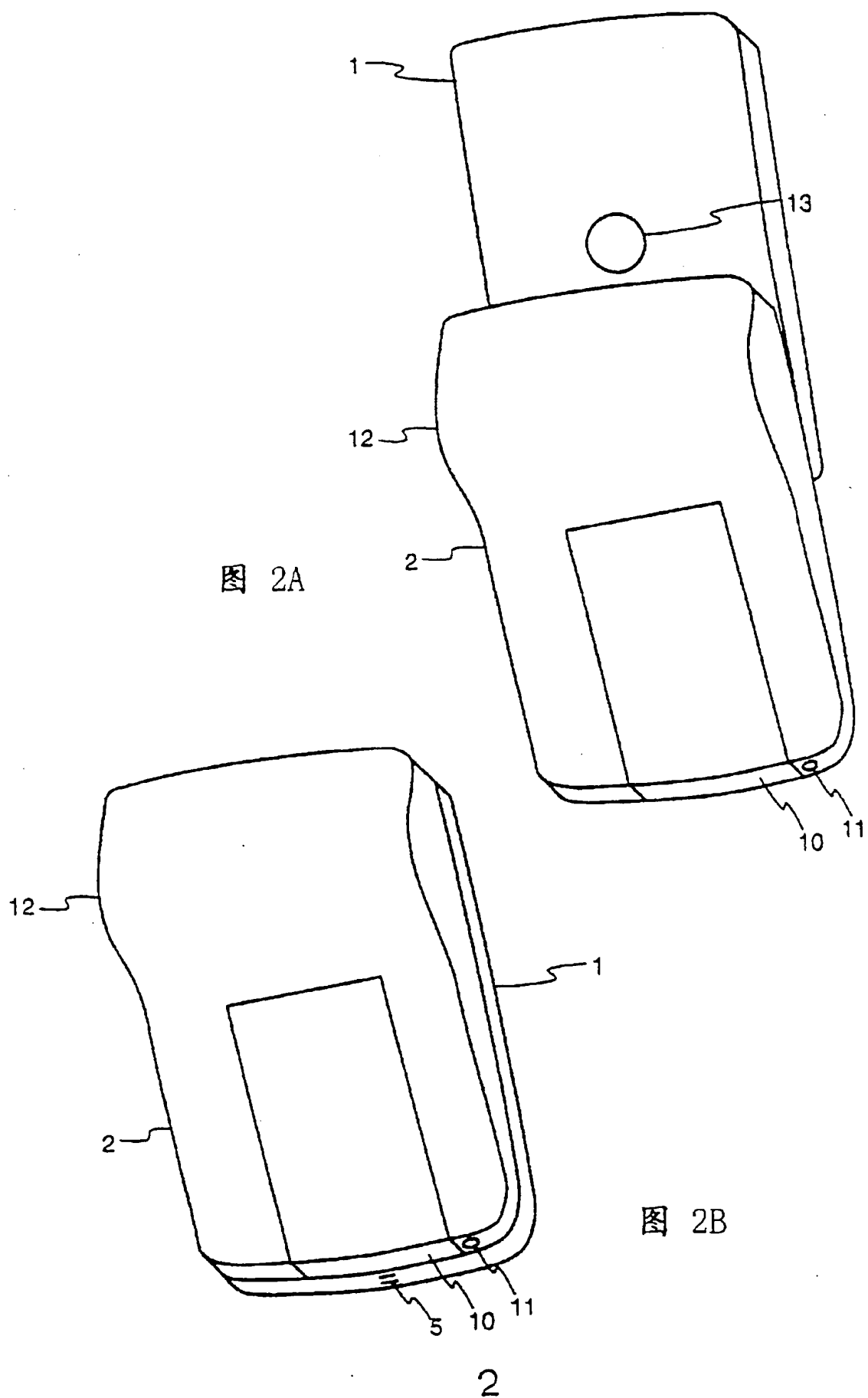


图 1B

99-05-04





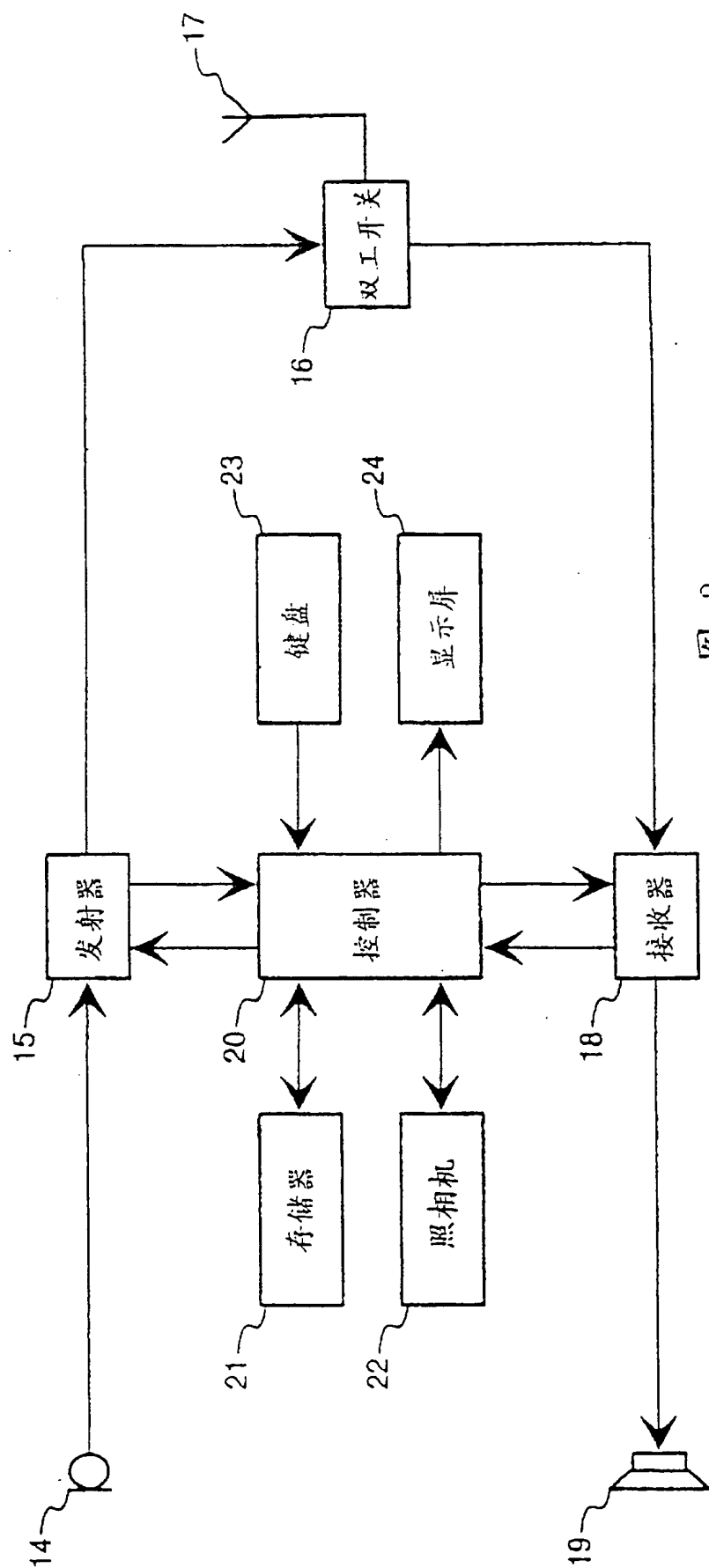


图 3

Family P.D. of CN 1238628A



US006308084B1

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**Lonka**

(10) **Patent No.:** **US 6,308,084 B1**  
(45) **Date of Patent:** **Oct. 23, 2001**

(54) **MOBILE COMMUNICATIONS DEVICE  
WITH A CAMERA**

- (75) **Inventor:** Pekka Lonka, Salo (FI)  
(73) **Assignee:** Nokia Mobile Phones, Ltd., Espoo (FI)  
(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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- (51) **Int. Cl.<sup>7</sup>** ..... **H04M 1/00**  
(52) **U.S. Cl.** ..... **455/556; 455/90; 396/429; 379/433; 348/14.01; 348/552**  
(58) **Field of Search** ..... **455/90, 556, 557, 455/550; 396/429; 379/433; 348/207, 373, 374, 375, 220, 552, 14.01**

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*Primary Examiner*—Lee Nguyen

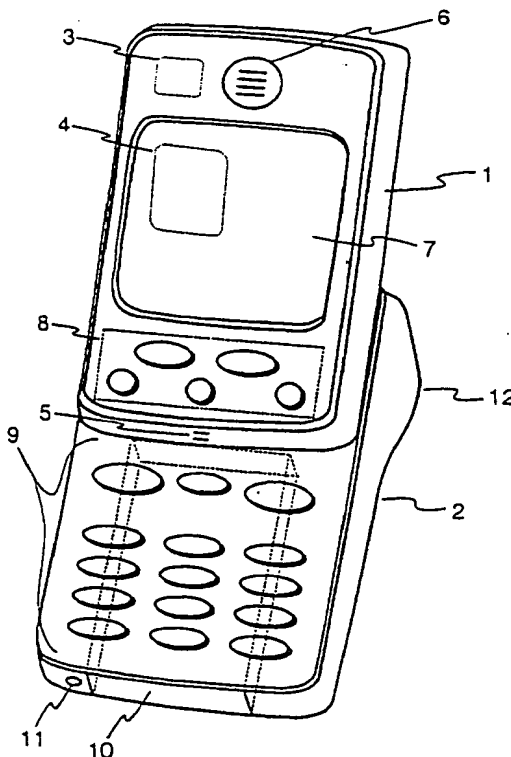
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(57) **ABSTRACT**

The invention pertains to a mobile communications device with a camera, comprising a microphone (5), loudspeaker, display, keypad and camera. According to the invention the mobile communications device comprises at least two parts covering each other alternatively completely in the transport position of the camera or partly in the operational position of the camera so that when the parts (1, 2) cover each other in the transport position of the camera the lens (13) of the camera is protected, and in the operational position of the camera the lens (13) of the camera is exposed. Such a mobile communications device is easy to use and includes a protected lens (13) the protection of which is based on normal procedures carried out by the user of the mobile communications device when using the device.

**7 Claims, 3 Drawing Sheets**



#### Abstract of **US6308084**

The invention pertains to a mobile communications device with a camera, comprising a microphone (5), loudspeaker, display, keypad and camera. According to the invention the mobile communications device comprises at least two parts covering each other alternatively completely in the transport position of the camera or partly in the operational position of the camera so that when the parts (1, 2) cover each other in the transport position of the camera the lens (13) of the camera is protected, and in the operational position of the camera the lens (13) of the camera is exposed. Such a mobile communications device is easy to use and includes a protected lens (13) the protection of which is based on normal procedures carried out by the user of the mobile communications device when using the device.

#### Description of **US6308084**

The invention relates to a mobile communications device with a camera, which can be used, in addition to normal mobile telephone and data communications, to take photographs.

From patent document WO 95/00374 it is known a camera integrated into a mobile communications device, wherein the lens of the camera is always exposed like in a normal camera or is brought out from beneath a keypad, being thus protected when the camera is not in use. The lens is released e.g. by moving or lifting the keypad and returned to its place at the same time as the keypad is returned to its place.

A problem with the known devices is that an unprotected lens of a camera integrated into a mobile communications device is susceptible to dirt and scratches or a protected lens is difficult to bring out and return to the storage position.

From the patent document U.S. Pat. No. 5,666,159 it is known an electronic camera system wherein digital photographs taken with the system are wirelessly transmitted to many kinds of remote apparatus.

An object of the invention is to provide an ergonomic mobile communications device with a camera with which photographing is easy and wherein the lens of the camera is protected in such a manner that no special measures are required apart from the normal use of the mobile communications device to bring out the lens.

The objects are achieved using a construction not unlike the sliding cover in modern mobile communications devices, but at the same time dividing the mobile communications device into two roughly equal parts which are slid as far apart as possible before use. Function keys advantageously include at least three and not more than ten keys. Typical function keys include call start and end keys, arrow keys or corresponding browsing keys and memory management keys. Function keys may also include a known multifunction key.

The invention pertains to a mobile communications device with a camera, said device comprising a microphone, loudspeaker, display, keypad proper and a camera, and the mobile communications device comprises at least two parts covering each other alternatively

completely in the transport position of the camera or partly in the operational position of the camera so that when the parts cover each other in the transport position of the camera the lens of the camera is protected, and in the operational position of the camera the lens of the camera is exposed. According to the invention an image can be projected through the lens of the camera and the display serves as a viewfinder for the camera by displaying the through the lens projected image to the user of the device and the lens of the camera is placed in the device essentially on a different side than the display.

In accordance with the invention, when the mobile communications device is opened so as to be employed in its proper use, the lens of the camera is brought out from between the parts of the device where it has been well protected from environmental effects such as dust and scratching objects. When in operational state, the mobile communications device can be used for taking photographs preferably by pressing one function key. The display of the mobile communications device serves as a viewfinder when aiming the camera and when the shutter is released, whereafter the image is stored in memory and the picture in the viewfinder is fixed on the display. The mobile communications device is also designed so as to have a shape easy to grip so that when holding the mobile communications device in hand, one would not touch the lens of the camera. Preferred embodiments of the invention are presented in the dependent claims.

The invention will now be described in more detail with reference to the accompanying drawing wherein

FIG. 1 shows a frontal view of a mobile communications device,

FIG. 2 shows a rear view of a mobile communications device according to the invention, and

FIG. 3 shows a block diagram of a mobile communications device according to the invention.

**FIG. 1 show a frontal view of a mobile communications device which according to the invention has a camera lens depicted in FIG. 2 in the rear. The mobile communications device comprises two parts, a radio part 1 and a hand part 2 including the keypad proper. In FIG. 1A the mobile communications device is open in its operational position wherein the hand part 2 has been slid out from beneath the radio part 1. In FIG. 1B the mobile communications device is closed but can be used e.g. for calls by means of the function keys. The mobile communications device further comprises an internal antenna 3, radio part 4, microphone 5, loudspeaker 6, display 7, function keys 8, battery 10 and charge interface 11, which can be used also when the mobile communications device is closed in the transport position. In the operational position, also the keypad 9 proper can be used. Furthermore, the hand part 2 of the mobile communications device has a shape 12 that is easy to grip. FIG. 1A shows in dashed lines both the outlines of the parts 3, 4, 10 inside the phone and the function keypad 8.**

**FIG. 2 show a rear view of a mobile communications device according to the invention.**

In FIG. 2A the mobile communications device is open in its operational position wherein the lens 13 of the camera according to the invention is exposed and ready to be used for taking photographs. In that state, the radio part 1 and hand part 2 have been slid as far apart as possible. A function key 8 is preferably utilized as a shutter release for the camera. In FIG. 2B the mobile communications device is closed in its storage position and cannot be used for taking photographs, but can be used for telephone calls by means of the function keys 8.

The location of the camera lens 13 on that side of the mobile communications device which is opposite to the display 7 makes it possible for the user to view the object of the photograph simultaneously both naturally past the mobile communications device and on the display 7. This construction is also advantageous to manufacture as the rear side of the mobile communications device can be manufactured using a single mould and the camera unit can be easily installed on top of a parallel printed circuit board unit in the radio part 1 of the mobile communications device. The lens 13 of the camera is well protected in the location described.

The battery 10 of the mobile communications device is located in that part of the mobile communications device which includes the keypad 9 proper in order to place the center of gravity as low as possible to make photographing easier in vertical position.

FIG. 3 shows a block diagram of the essential parts of a mobile communications device according to the invention. Speech voiced into a microphone 4 is taken by means of a transmitter 15 to a duplex switch 16 and further to an antenna 17. Speech received by the antenna 17 is taken by means of a receiver 18 to a loudspeaker 19 to be heard. All functions are controlled by a controller 20 connected to a keyboard 23 for providing input. Such input includes e.g. the release of the shutter of the camera 22. Photographs taken with the camera 22 are stored in memory 21 and shown on the display 24.

As an example, let us consider the use of the mobile communications device in photography. When the mobile communications device is in transport position, as depicted in FIGS. 1B and 2B, the user takes hold of the radio part 1 and hand part 2 and pulls the parts as far apart as possible so that the mobile communications device preferably is activated for dialing or photographing. Alternatively, the mobile communications device is activated for photography using a menu control. When photography is activated, the user sees the image of the viewfinder of the camera on the display 7 of the radio part 1 and can aim the camera. The picture is taken by pressing a key 8, 9 on the mobile communications device so that said key in this mode functions as a shutter release button. The function of the key serving as a shutter release preferably depends on the mode of the mobile communications device and said key is located such that it is easily pressed e.g. with a thumb in order to take the picture. Such a key preferably belongs to the function keys 8 in the mobile communications device described here, but in a device with different proportions it may also be located elsewhere, such as in the keypad 9 proper, where, however, it is easy to use considering

the size of the device. The function of the key may be different in call and photo modes but it may also vary within those modes. A key that functions permanently as a shutter release is also possible, but it cannot be used during normal mobile communications.

As the shutter is released the image in the viewfinder is fixed on the display 7, showing the picture that was taken and stored preferably in the device's own memory, but in principle it is possible to use alternatively or in addition separate additional memory in order to increase the number of pictures that can be stored.

Pressing the shutter release button causes the camera to shake slightly, and to reduce blurredness caused by the shake the device waits for a user-selectable period of time after the shutter release button has been pressed before storing the image in memory. Said delay can be menu-selected preferably between 0 to 1 seconds at 200 ms steps.

Having pressed the shutter release button and when the image is fixed on the display the photographer can check whether the picture is good, as regards e.g. the composition and lighting, and then either save the picture or take a new one. The picture is stored in the memory of the mobile communications device preferably in compressed format to save memory space; one such compression algorithm is the JPEG (Joint Photographers Experts Group) algorithm. A stored image can be further transmitted e.g. to a personal computer (PC) using an infrared or wire link, to an electronic mail system or to another mobile communications device via air interface or to a fax machine, for example.

Stored images can be used in the mobile communications device e.g. in a telephone directory with pictures.

The implementation is not described in greater detail here as a person skilled in the art can realize the arrangement according to the invention on the basis of what has been disclosed above.

The invention is not limited to the embodiments described above, but many modifications are possible within the scope of the invention defined by the claims set forth below.

#### Claims of US6308084

What is claimed is:

1. A mobile communications device with a camera, comprising a microphone (5), a loudspeaker (6), a display (7), keypad (9) proper, and a camera, and the mobile communications device comprises at least two parts (1, 2) covering each other alternatively completely in the transport position of the camera or partly in the operational position of the camera so that when the parts (1, 2) cover each other in the transport position of the camera the lens (13) of the camera is protected, and in the operational position of the camera the lens

(13) of the camera is exposed, characterized in that an image can be projected through the lens (13) of the camera and the display (7) serves as a viewfinder for the camera by displaying the through the lens projected image to the user of the device and the lens (13) of the camera is placed in the device essentially on a different side than the display (7).

2. The mobile communications device of claim 1, characterized in that the device also comprises function keys (8) and the device can be used for telephone calls by means of the microphone (5), the loudspeaker (6), the display (7) and the function keys (8) even when the lens (13) of the camera is covered.

3. The mobile communications device of claim 1, characterized in that the parts (1, 2) covering each other partly or completely move by sliding with respect to each other.

4. The mobile communications device of claim 1, characterized in that the part (2) including the keypad (9) proper of the mobile communications device has in it a shaped grip (12) to make it easier to hold the mobile communications device in hand when used for taking photographs.

5. The mobile communications device of claim 1, characterized in that a photograph is taken by pressing a button the function of which varies in accordance with the operating mode of the mobile communications device.

6. The mobile communications device of claim 1, characterized in that the battery (10) of the mobile communications device is located in that part of the mobile communications device which includes the keypad (9) proper in order to place the center of gravity as low as possible to make photographing easier in vertical position.

7. The mobile communications device of claim 1, characterized in that pictures are being stored in the memory (21) of the mobile communications device and the pictures are used in the mobile communications device in a telephone directory.